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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/442,353	11/17/1999	HIRONORI KIKKAWA	NEM-01701	5715

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EXAMINER

NGO, HUYEN LE

ART UNIT PAPER NUMBER

2871

DATE MAILED: 04/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/442,353	KIKKAWA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Julie-Huyen L. Ngo	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,5,6,8-14 and 25-28 is/are pending in the application.  
     4a) Of the above claim(s) 10 and 11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,5,6 and 25-28 is/are rejected.
- 7) ☒ Claim(s) 1,2,5,6,27 and 28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 11, 2003 has been entered.

### ***Specification***

The specification is objected to as failing to provide proper antecedent basis for the following claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

In claim 1, the recitation calling for "*a transparent pixel electrode ...connected to at least one electrode included in at least one of said plurality of switching elements.*"

In claim 5, the recitation calling for "*a shielding layer is disposed on an area of at least one of said plurality of switching elements.*"

### ***Claim Objections***

Claims 1, 2, 5, 6, 27 and 28 are objected to because of the following informalities:

Claim 1 is objected to because of the recitation calling for *“a transparent pixel electrode ...connected to at least one electrode included in at least one of said plurality of switching elements,”* which can be construed that the *transparent pixel electrode is connected to more than one electrode included in more than one of said plurality of switching elements.* According to the specification and drawings (e.g. figure 1) the pixel electrode is only connected to one electrode of one switching element.

Claim 5 is (repeated for Applicant's attention) objected to because the recitation calling for *“a shielding layer is disposed on an area of at least one of said plurality of switching elements”* is inconsistent with what being disclosed in the specification and drawing (p. 11, lines 10-15 and figure 2), which discloses that the light-shielding layer is disposed on an area of ONLY ONE switching element.

Claim 6 is objected to because “the gate electrode electrically connected to a scanning line” lacks antecedence.

In lines 6-9 of claims 27 and 28, the recitation calling for *“a reflective layer constituted of a same material as a material constituting a gate electrode of said plurality of switching elements and simultaneously formed during formation of said gate electrode of said plurality of switching elements on a same plane as a plane of said gate electrode,”* is objected to because it appears from the specification and drawing that it should be \_\_a gate electrode of one of said switching elements\_\_.

Claims not specifically mentioned above are objected to as bearing the defect(s) of the claim(s) from which they depend.

Claims 27 and 28 are objected to under 37 CFR 1.75 as being a substantial duplicate of claims 13 and 14, respectively. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 8 and 9 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 8 is (repeated for Applicant's attention) rejected to because the recitation calling for the reflective layer formed of at least one of aluminum and an aluminum alloy (as amended in paper no. 13) was not described in the specification as originally filed. Also, the recitation calling for a broader scope of invention, which can be construed that the reflective layer is formed of a different material other than an aluminum or an aluminum alloy. According to the specification (page 5, lines 19-20), the reflective layer is ONLY formed of either aluminum or an aluminum alloy.

Claim 9 is rejected to as bearing the defects of claim 8 from which it depends.

Claims 25-28 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In claims 25 and 26, the recitation calling for "*a reflective layer simultaneously formed during formation of said switching elements,*" in lines 4-5, is not enable because each of the switching elements comprises more than one layer, therefore, it is unclear which layer of the switching element is simultaneously formed with the reflective layer. Further more, it appears (figures 1&2) that the reflective layer is formed (not constituted) on the same place as a plane of the gate electrode as recited in the penultimate paragraph of claim 25.

In claims 27 and 28, the recitation calling for "*a transparent pixel electrode formed on said reflective layer via an insulation layer and connected to at least one electrode included in at least one of said plurality of switching elements,*" in lines 10-13, is not enable since the transparent pixel electrode is connected to only one electrode included in only one of said plurality of switching elements (see figure 1 and 2).

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 5, 6 and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Ogawa et al. (US6122027A).

With respect to claim 1, Ogawa et al. teach (Figs. 8) a reflection type liquid crystal display comprising:

- a pair of substrates 101/108 disposed opposite to each other with a liquid crystal layer 106 disposed there between;
- a plurality of switching elements 137 formed on one surface of at least one of said pair of substrates;
- a reflective layer 102 constituted of a same material as a material constituting a gate electrode 132 of each of said plurality of switching elements and simultaneously formed during formation of said gate electrode, and on a same plane as a plane of said gate electrode (col. 7 lines 46-50);
- a transparent pixel electrode 105 formed on said reflective layer via an insulation layer 133 and connected to at least one electrode included in at least one of said plurality of switching elements,

- a color filter layer 103 disposed between said reflective layer and said transparent pixel electrode;

wherein

(Claims 2 and 6)

- said plurality of switching elements includes at least a thin film transistor; wherein said thin film transistor comprises a gate electrode electrically connected to a scanning line, a gate insulation film formed to cover said gate electrode, a semiconductor layer formed on said gate insulation film, a drain electrode electrically connected to a signal line, and a source electrode electrically connected to said transparent pixel electrode, and wherein said reflective layer is electrically separated from said gate electrode.

(Claim 5)

- a shielding layer (black matrix 131) is disposed on an area of at least one of said plurality of switching elements.

(Claim 8)

- said reflective layer is formed of at least one of aluminum and an aluminum alloy.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said



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subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa et al. (US6122027A) as applied to claims 1 and 8 above in view of Seiki et al (US 5,811,835).

It is well known in the art for gate electrodes to compose of a low-resistance metal, such as aluminum (Al), coated with chromium (Cr), tungsten (W), titanium (Ti), tantalum (Ta), or some other metal whose melting point is higher than that of aluminum such as neodymium or with an aluminum alloy so that a hillock, blister, etc. of aluminum can be effectively prevented, as evidenced by Seiki et al (col. 1, lines 25-32 and col. 3, lines 30-40).

Therefore, it would have been obvious to one of ordinary skilled in the art to form the reflective layer and/or the gate electrode in the device of Ogawa et al. from an alloy of aluminum and neodymium for the reasons set forth above, as taught by Seiki et al.

Claims 12, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa et al. (US6122027A) as applied to claim 1 above in view of Ukita et al. (US5940154).

Ogawa et al. fail to disclose at least a rough portion is formed below a reflective layer, and said reflective layer is formed to cover said at least one rough portion.

Ukita teaches (Figs. 3 and 5-6) forming at least one rough portion below said reflective layer 2. Doing so would significantly reduce light from entering the semiconductor layer 7 of the thin film transistor 20 and thereby would not decrease in

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an off-resistance. Accordingly the leakage current would decrease and no deterioration in display grade would occur in the display device.

Therefore, it would have been obvious to one of ordinary skilled in the art to form at least one rough portion on the substrate in the device of Ogawa et al. and then form an aluminum reflective layer over the at least one rough portion for reducing light from entering the Ogawa et al.'s thin film transistor and for the reasons as set forth above, as taught by Ukita et al.

1. Claims 13, 14, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa et al. (US6122027A) in view of Ukita et al. (US5940154) as applied to claim 12 above, and in further view of Kimura (US 5,610,741).

Ogawa et al. and Ukita et al. fail to disclose the reflection type liquid crystal display comprising:

- rough portion formed of a material which is not deformed in a heating process performed later and which does not contain high density impurities adversely affecting the liquid crystal display (claim 13)
- said rough portion is formed by forming an insulation film and patterning the insulation film (claim 14).

Kimura teaches (figures 13&14 and col. 15, line 61 to col.16, line 36) patterning a photo resist film or insulation film to form rough portion(s) on a surface of a substrate and below a reflective layer (col. 16, lines 63-67) for effectively reflecting light. Also, it is well known in the art to form a photo resist film of a material, which is not deformed in a

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heating process performed later and which does not contain high density impurities adversely affecting a liquid crystal display.

Therefore, it would have been obvious to one of ordinary skill in the art to pattern rough portion(s) below the reflective layer (2), in the device of Nagata et al. in view of Ukita and Hiraishi from a photoresist film or an insulation film for the reasons set forth above, as taught by Kimura.

**Contact Information**

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Julie-Huyen L. Ngo whose telephone number is (571) 272-2295. The Examiner can normally be reached on T-Friday.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's Supervisor, Mr. Robert H. Kim can be reached at (571) 272-2293.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1562.

Any facsimile-transmitted correspondence to this application should be faxed to the facsimile number (571) 273-2295. Please call before fax any paper over.

April 16, 2004



*Julie-Huyen L. Ngo*

**Patent Examiner**  
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